

WHAT IS CLAIMED IS:

1. An active diffracted sound control apparatus comprising:

5        sound source measuring device arranged on the  
object sound source area side of a wall body arranged  
between the object sound source area and a sound  
receiving area for measuring the object sound  
information in the neighborhood of the wall body;

10        direct object sound measuring device arranged on  
the sound receiving area side of the wall body for  
measuring the object sound information in the  
neighborhood of the wall body;

15        a control sound source arranged in the  
neighborhood of the wall body for generating a control  
sound to reduce the object sound at a virtual object  
sound measuring point in the sound receiving area; and

      object sound control device for controlling the  
output of the control sound based on the output of the  
object sound measuring device;

20        wherein the object sound control device is  
operated on the basis of a first sound transmission  
characteristic between the direct object sound  
measuring point for the object sound source and the  
virtual object sound measuring point and

25        a second sound transmission characteristic between  
the direct object sound measuring point for the control  
sound source and the virtual object sound measuring

point.

2. An active diffracted sound control apparatus according to claim 1,

5 wherein the object sound control device alternates between a control section for generating the control sound and an identification section for obtaining a third sound transmission characteristic between the object sound source measuring device and the direct sound measuring device.

10 3. An active diffracted sound control apparatus according to claim 1,

15 wherein the sound source measuring device, the direct object sound measuring device and the control sound source are configured integrally and installed removably on the wall body.

4. An active diffracted sound control apparatus according to claim 1,

wherein the control sound source is arranged at the upper end portion of the wall body, and

20 wherein the direct object sound measuring device is arranged within the distance of the shortest wavelength of the frequency of the object sound from the upper end portion of the wall body.

25 5. An active diffracted sound controller comprising:

sound source measuring device arranged on that part of a wall body having an opening between

a controlled sound source area and a sound receiving area which is nearer to the controlled sound source area for measuring the controlled sound information in the neighborhood of the opening;

5           direct controlled sound measuring device arranged on the part of the opening nearer to the sound receiving area for measuring the controlled sound information in the neighborhood of the opening;

          a control sound source arranged in the  
10 neighborhood of the opening for generating a control sound for reducing the controlled sound at a virtual controlled sound measuring position in the sound receiving area; and

          controlled sound control device for controlling  
15 the output of the control sound based on the output of the controlled sound measuring device;

          wherein the controlled sound control device is operated based on a first sound transmission characteristic of the controlled sound source between  
20 the direct controlled sound measuring position and the virtual controlled sound measuring position, and a second sound transmission characteristic of the control sound source between the direct controlled sound measuring position and the virtual controlled  
25 sound measuring position.

6. An active diffracted sound controller according to claim 5,

wherein the controlled sound control device is operated alternately in a control section for generating a control sound and an identification section for producing a third sound transmission characteristic of the controlled sound source between the controlled sound source measuring device and the direct sound measuring device.

7. An active diffracted sound controller according to claim 5,

wherein the sound source measuring device, the direct controlled sound measuring device and the control sound source are configured integrally and adapted to be arranged removably on the opening.

8. An active diffracted sound controller according to claim 5,

wherein the control sound source is arranged at the upper end portion of the wall body; and

wherein the direct controlled sound measuring device is arranged within the distance of the shortest wavelength of the frequency of the controlled sound from the edge portion of the opening.

9. An active diffracted sound control method comprising:

a sound source measuring the controlled sound information at a sound source measuring position in the neighborhood of that part of a wall body which is nearer to the controlled sound source area, the wall

body being arranged between the controlled sound source area and the sound receiving area;

5 a direct controlled sound measuring the controlled sound information at a direct controlled sound measuring position in the neighborhood of that part of the wall body which is nearer to the sound receiving area;

10 a control sound generating a control sound, at a control sound generating position in the neighborhood of the wall body, for reducing the controlled sound at a virtual controlled sound measuring position in the sound receiving area; and

15 a controlled sound controlling the output of the control sound based on the output from the information of the controlled sound measured in the direct controlled sound measuring ;

20 wherein the controlled sound controlling is operated based on a first sound transmission characteristic of the controlled sound between the direct controlled sound measuring position and the virtual controlled sound measuring position, and a second sound transmission characteristic of the control sound between the direct controlled sound measuring position and the virtual controlled sound measuring position.

25 10. An active diffracted sound control method according to claim 9,

wherein said controlled sound controlling is executed alternately in a control section for generating a control sound and an identification section for producing a third sound transmission characteristic of the controlled sound between the controlled sound source measuring position and the direct sound measuring position.

11. An active diffracted sound control method according to claim 9,

wherein the control sound generating position is at the upper end portion of the wall body, and

wherein the direct controlled sound measuring position is within the distance of the shortest wavelength of the frequency of the controlled sound from the upper end portion of the wall body.

12. An active diffracted sound control method comprising:

a first sound transmission characteristic measuring a first sound transmission characteristic of the controlled sound between the direct controlled sound measuring position in the neighborhood of the part of the wall body nearer to the sound receiving area and the virtual controlled sound measuring position on the part of the wall body nearer to the sound receiving area, the wall body being arranged between the controlled sound source area and the sound receiving area;

a second sound transmission characteristic  
measuring a second sound transmission characteristic of  
the control sound between the direct controlled sound  
measuring position and the virtual controlled sound  
measuring position;

a sound source measuring the controlled sound  
information at a sound source measuring position in the  
neighborhood of the part of the wall body nearer to the  
controlled sound source area;

a direct controlled sound measuring the controlled  
sound information at the direct controlled sound  
measuring position;

a control sound generating a control sound at a  
control sound generating position in the neighborhood  
of the wall body for reducing the controlled sound at  
the virtual controlled sound measuring position; and

a controlled sound controlling the output of the  
control sound based on the output from the information  
of the controlled sound measured in the direct  
controlled sound measuring, the first sound  
transmission characteristic and the second sound  
transmission characteristic.

13. An active diffracted sound control method  
according to claim 12,

wherein the controlled sound controlling is  
executed alternately between a control section for  
generating the control sound and an identification

section for producing a third sound transmission characteristic of the controlled sound between the controlled sound source measuring position and the direct sound measuring position.

5           14. An active diffracted sound control method according to claim 12,

              wherein the control sound generating position is at the upper end portion of the wall body, and the direct controlled sound measuring position is within  
10           the distance of the shortest wavelength of the frequency of the controlled sound from the upper end portion of the wall body.